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The curriculum consists of four major topics: equations, functions, graphing, and signed numbers. Each topic can be initiated independently and built cumulatively throughout the elementary school grades. The topics are developed largely through games and/or lessons designed to help pupils discover "secret" patterns or develop tentative hypotheses. "New math" vocabulary is kept to a minimum. The intention is not to teach arithmetic per se, but to incorporate it into the curriculum to give pupils arithmetic practice in an interesting, life context.

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1965 HARVARD-BOSTON SUMMER PROGRAM

Mathematics Curriculum

Revised Unit Outline

Specific Ideas Involved in the Math Curriculum

1. The curriculum consists of four major topics: equations (or open sentences, as they will be called), functions, graphing, and signed numbers. See the chart on the last page of this revised outline. (The topic of signed numbers is highly recommended, but will have to be dropped if, for some reason, it is impossible for the two Math Subject Matter Specialists to provide the students with the necessary background.)

2. Each of the four topics can be initiated independently and builds cumulatively. As each topic is treated in more depth (i.e., as one proceeds down the list in the chart), one can see, by checking the additional prerequisites in square brackets, that the other topics are tied in.

3. Any individual day's lesson can be quite varied by spending a bit of time (depending on the interest and productivity of the pupils) on each of two, three, or all four topics.

4. The topics are introduced and developed largely through the use of games and/or lessons designed to help pupils discover "secret" patterns or develop tentative hypotheses.

5. The grade-level dotted lines only indicate what has been found to be appropriate with classes in the schools of inner cities. It is quickly and emphatically added that these dotted lines SHOULD NOT set the limit nor the goal to be reached during the course of the summer.

6. "New Math" language will be kept to a minimum.

7. During the first week of the summer program, the two Math Specialists and the Team Leaders will try to identify those teachers who are especially interested or strong in Math and will spread them out among the sub-teams.

8. Arithmetic (i.e., addition, subtraction, multiplication, and division of whole numbers and fractions) will come into the curriculum at all points, only incidentally. The intention is not to teach arithmetic per se, only to give the pupils plenty of arithmetic practice in an interesting and live context.

9. Most of the material will be borrowed from Robert B. Davis' Madison Project and David Page's University of Illinois Arithmetic Project. Each team will be provided with an ample supply of Davis' Discovery in Mathematics and Page's Number Line, Functions, and Fundamental Topics, in order that the students do not have to rely entirely on the daily sessions with the two Math Specialists. In addition, films from both projects will be shown at appropriate times.

10. Students (i.e., teachers) who bring "new math" teaching skills with them to the program (e.g., cuisenaire rods) will be encouraged to use them. The Math Subject Matter Specialists hope to be able to help such teachers weave these skills into the general curriculum.

FUNCTIONS	EQUATIONS (OPEN SENTENCES)	GRAPHING	SIGNED NUMBERS	APPROXIMATE GRADE LEVEL
F.1. Introduction via "Guessing the Rule" game F.2.* Combining functions via "Hops on the No. Line" (G.1., G.2.)**	E.1.* True, False and Open Sentences with one variable appearing once (truth sets and use of parentheses) E.2.* Rule for substitution with open sentences using one variable more than once E.3.** Open sentences with two variables (truth tables)	G.1. The Number Line (the non-negative part) G.2. The Number Line (including the negative part) (S.1.) G.3.* The Cartesian Coordinate Plane via "Grid Game" (also known as modified tic-tac-toe) G.4.+ Variations on G.3. to include quadrants using negative numbers G.5.** Graphing linear functions (E.3.)	S.1. Introduction to signed numbers via "Pebbles in the Bag" scheme S.2. Further introduction via "Pet Shop Stories" S.3. Further introduction via "Bus Trip Stories" S.4. Putting the above to use in solving quadratic equations (E.2.) S.5. Operations with signed numbers via "Postman Stories"	For first and second grade graduates The third and fourth grade graduates might also cover the enclosed
F.3. Application of fns. via nomographs F.4. Application of fns. via the theory of simple games	E.4.+ Finding truth sets of more complex open sentences E.5. Making a list of identities E.6. Shortening the list of identities (at least to some extent)	G.6. Graphing a circle (S.5.) G.7. Graphing a parabola		The fifth and sixth grade graduates might cover all the above plus these additional topics

** Brackets indicate prerequisites apart from topics listed directly above it.
* Like I and III of previous outline.

+ Like V.B. of previous outline.
* Like V.A. of previous outline.
** Like V.C. of previous outline.

* Like II of previous outline.
** Like V.C. of previous outline.
+ Like II and IV of previous outline.